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December 1942

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**MILITARY INTELLIGENCE
SERVICE**

**WAR DEPARTMENT
Washington, December 1942**

**INTELLIGENCE
BULLETIN**

**No. 4
MIS 461**

NOTICE

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“British prisoners have been praised, even by their enemies, for refusing to talk after capture.”

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PART ONE: JAPAN

Section I. FIGHTING IN THE SOLOMON ISLANDS

1. INTRODUCTION

The *Intelligence Bulletin* for November included a section on the early fighting in the Solomon Islands. Since that time additional reports have been received, giving much more information about Japanese tactics and weapons. All the reports are from officers and enlisted men who took part in the operations. In presenting the new information, duplication of data given a month ago is avoided as far as possible.

Our observers are placing renewed emphasis on the extreme cunning, treachery, fanaticism, and brutality practiced by the Japanese. Several instances of these practices are given in this section. It is the belief of our observers that our troops must take nothing for granted in dealing with the Japanese and must ever be alert for any possibility.

2. TACTICS

a. Reconnaissance

The Japanese are firm believers in securing detailed intelligence about their opponents, and have been very successful to date in this aspect of operations. They have prepared maps of great detail, even of jungle areas. They have had considerable success in radio interception, taking good advantage of the information obtained.

One Marine patrol came upon a 25-man Jap patrol in the Solomons and accounted for at least 18 of the enemy. The Marines reported that the Japanese were exceedingly well equipped. They carried portable radio transmitters and mapping and sketching equipment. Our interpreter read captured messages indicating the presence of a landing force and including other valuable information, which was used by our troops in dealing successfully with the Jap force.

b. Infiltration

Our observers continue to stress the infiltration tactics of the Japanese in jungle warfare. Individual Jap soldiers, with light but very effective equipment for independent combat, crawl through jungles so thick that it would appear impossible for a human being to penetrate. Yet for miles they wriggle their way through on hands and knees, or on their stomachs—taking several days, if necessary. Once behind our lines or on our flanks, they often get together and form large and

effective patrols, which cut off or wipe out our outposts. They seek to weaken our main positions and make us vulnerable to an attack in force. Often these infiltrating groups, which include snipers, are assisted by covering fire from heavy machine guns, automatic rifles, and mortars.

At night, the infiltration tactics apparently are aimed at creating confusion in our ranks and destroying our automatic weapons. (This bears out the importance of our training doctrine which calls for riflemen to protect our automatics from the front, flanks, and rear.) At times Jap groups tried to stampede our troops, shouting "American Marines, you die!"—which apparently is a battle cry. Sometimes these groups were so small that their members must have realized that they were attempting a suicide venture. On one occasion, a Japanese lieutenant and two privates charged a Marine battalion headquarters, shouting their battle cry. One of them bayoneted a Marine sergeant as he sat on a stump. The three were immediately overpowered and killed—they must have known in advance that the charge would lead to their death.

c. Sniping

In many respects snipers caused the Marines more trouble than any other single factor. Sniping is tied up very closely with offensive infiltration attacks, and also with nearly all the defensive efforts of the Japanese. Normally, the snipers tied themselves in the tops of trees, where they were well camouflaged. Often, how-

ever, they were found in nearly every place where they could hide—such as behind logs and in bushes, caves, or ravines. At night, several Japs leapt into foxholes occupied by Marines and were killed because they could not give the password.

Usually the snipers waited until their target had passed and then shot him in the back. They seldom fire on individuals in movement. This is why our troops now take cover at once when they halt.

The main function of the snipers apparently is to harass and confuse our forces, distracting them from their main effort. "Our troops found it most undesirable to allow the assault echelon to become involved with snipers on the flanks and rear," said one observer. "In a number of instances, it was found practicable to bypass the snipers with the assault echelon and let small follow-up patrols clean them out later."

After shooting snipers who had tied themselves in trees, our troops had trouble in getting the bodies down. The problem was solved by having a tank knock the tree down, or by placing a ring of dynamite around the base of the tree and blowing it up.

Japanese prisoners said that normally each of their infantry squads included two snipers, who ordinarily tied themselves to tree tops in the area occupied by the squad.

Nearly all conceivable types of camouflage have been used by these snipers. Some in the Solomons wore fiber cloaks, which blended perfectly with the coconut tree trunks.

The snipers, as well as other Jap troops, have unbelievable patience and endurance. The Marines had numerous cases where their enemies crouched or lay in one position, highly camouflaged, for as long as 3 days just to fire one shot—undoubtedly realizing that they would be killed immediately afterwards. As an illustration, one of our men at Milne Bay (New Guinea) relates the following:

“A Jap, camouflaged as a tropical bush, crouched for 2 days without moving, on the edge of an Australian jungle outpost, to learn the names and nicknames of members of their detachment and their particular habits. One day, in a perfect Australian accent, he called out, ‘Say, Bill, where are you? This is Alf.’ When Bill shouted in reply, the tropical bush suddenly arose and shot him dead. The bush immediately dropped back into the foliage. The sniper was wounded only after the area had been completely raked by machine-gun fire. The Jap, wounded severely, told his story. He had fully expected to die after the shooting.”

d. Communication

The Japs have been using for communication a large number of very efficient, light-weight, and portable radio transmitters and receivers, as well as flares, Rising Sun flags, and bird calls.

Red and white flares, as a rule, have been used to outline their front line and also to signal the arrival of a unit on our flanks. The flares have been extremely

useful to our forces, who have successfully raked the areas with artillery fire.

Rising Sun flags have been tied to trees to inform Jap aviators of the front-line positions of their troops. The flags also proved to be valuable aids to our aviators, who bombed the indicated areas with excellent results.

The bird calls apparently were used as a night signal to inform commanders as to the whereabouts of their various sub-units. Sometimes the calls also may have been used to confuse our troops.

e. Antitank

Antitank weapons used by the Japanese include what is believed to be a 47-mm gun, grenades, and gasoline. At times, when our infantry was not within supporting distance of our tanks, gasoline was thrown on the latter and set on fire. In at least one case, the Japs jammed a driving sprocket before throwing on the gasoline.

Grenades apparently are thrown at the tanks to set them on fire after gasoline has been thrown on them, and to hit openings through which the crews can be injured.

It is known that the Japanese have been trained to throw shelter halves over the slits of tanks in close country and then attack them with magnetic bombs or other hand weapons.

The antitank gun made a hole slightly larger than our 37-mm shell, and observers are reasonably sure that the weapon is a 47-mm gun. This is entirely probable since the Germans have a 47-mm antitank weapon. One

shell, apparently fired from a distance of 100 yards, penetrated the right forward side of an M-3 turret and hit the opposite turret wall, where it exploded. Filling from the shell ran down the wall and began to burn with a yellow flame and bluish smoke. The driver stated that fumes from the substance were sharp and stifling, and caused his mouth to dry and pucker. The flame was difficult to extinguish. Reports do not indicate whether the tank hit was a light or medium M-3; but at a range of 100 yards the turret of a light M-3 could be penetrated and it is possible that a medium tank turret could be penetrated at this range.

To date, there has been no evidence that the Japanese actually have used magnetic tank grenades in the Solomons, although some of these grenades have been captured on Guadalcanal.

f. Deception

The Japanese go to extremes in the employment of deception. Many of these illustrate their treachery and lack of scruples. The following is a partial list of the deceptions used in the Solomons:

(1) While an American doctor was dressing the wounded leg of a Japanese, the Jap pulled a knife and stabbed him.

(2) Several Japanese nurses walked up to our wounded with their arms raised, and, when close at hand, they threw hand grenades among the soldiers.

(3) Two or three days after the Marines landed in the Solomons, a Japanese captain of a labor battalion

walked into a division headquarters and surrendered. He said his entire battalion would surrender and could be brought in if a detail were sent out to their position, which was some distance down the beach. A colonel and a detachment of 20 Marines were sent in a landing boat to the specified position. As he and the detachment stepped ashore, they all were killed except a sergeant, who was wounded. He returned to headquarters. A Marine force rounded up the Japs shortly afterwards by attacking from the rear. Instead of being a labor battalion, the Japanese turned out to be a special-weapons detachment, 200 strong.

(4) Japanese-employed natives often informed our headquarters they had groups of wounded Marines, and offered to guide our rescue forces to the men. We learned from bitter experience that these were Japanese ambushes.

(5) The Japs learned the names of some of our officers, and, during darkness, would call out to them in excellent English in order to locate them, or to issue withdrawal orders to them in English.

(6) They also used the old trick of setting off fire-crackers to distract our troops, and to give the impression they were being attacked by large forces.

(7) Among their tricks, the Japanese painted with red crosses all the buildings they occupied, believing that our forces would not bomb the marked buildings because of our high ethics. One such building, when bombed, turned out to be an ammunition dump.

(8) On one of the small islands taken in the Solomons, the Marines ran into some tough fortified opposition and called for 1,000-pound demolition bombs. The group air commander of an aircraft carrier was directed to bomb the island, and, on his way to the island, he received a counter-order stating that the Marines had now gained possession of the island and that he was not to drop any bombs. "Authenticators" (pass words) had been worked out among the pilots the night before, using the pilot's nickname. The voice countermanding the order was unable to furnish the correct authenticator and the bombing was carried out. The commander discovered that the voice on the radio was that of a Jap, who was speaking English and using a perfect American accent.

g. Camouflage

Instead of using sandbags as part of their defensive setups, the Japanese used bags made from rice straw and filled with dirt. Apparently, unhulled rice seeds or seeds of a similar plant were planted on the top portion of the sacks, because they were covered with a green growth. This blended the defensive positions with their background.

The Marines found from experience that our grenades and mortar shells should be painted green. When they are painted a light color, they can be seen easily at night. In several instances, the Japanese were able to pick up the grenades in the darkness and throw them back before they exploded. Our troops are finding it

best to remember that the time delay of our grenades is between 4 and 5 seconds, and that the length of time the grenade is held by the thrower should be governed by the distance between him and the enemy. It should never be held more than 2 seconds.

h. Night Operations

Japanese troops are particularly well trained in night operations, and they prefer night attacks to those during daylight. Invariably, they try to work small groups to our flanks and rear in an attempt to cause panic and destroy automatic weapons.

In making night attacks, the Japanese select clearly defined terrain features, such as ridges and streams, for successive objectives. The attacks generally are delivered on a narrow front and uphill whenever possible. By attacking from low ground, the Japs try to conceal their forces and at the same time silhouette ours against the sky line.

A series of red flares (similar to our Roman candles) have been used by the Japanese platoon leaders to indicate the direction of advance. The signal for the assault has been a flare fired to hang over their objective.

In several instances, they placed smoke on Marine positions and then charged forward, shouting "Gas!" in English. Some Japs who had infiltrated to our flanks and rear shouted "Withdraw!" when the frontal attack began to develop in force. The groups that were to make the main assault talked and sang during their approach, to distract our attention and facilitate and

cover the movement into position of the infiltration groups.

The Japanese used their automatic weapons extensively at night, but did very little firing with rifles. In attacking, their fire usually was high, apparently to avoid hitting Japs who approached our lines to lay down grenade barrages. An assault generally followed each barrage.

Our automatic weapons, mortars, and artillery were excellent in breaking up night attacks.

i. Defense

Against our landings on the various islands, the Japanese used mostly rifle and machine-gun fire from dugouts and other prepared emplacements, supported by the inevitable snipers. Our preparatory bombing and shell fire had caused few casualties, because the dugouts, shelters, and trenches afforded the Japs excellent cover. The preparatory fire kept the enemy under cover while our first and second waves landed. The fighting developed into a series of attacks on dugouts and the destruction of snipers in trees. Use of improvised flame throwers and dynamite at dugout entrances proved the most effective way of dealing with the defenders.

j. Air

(1) *Fighter planes*.—Japanese fighters come in from all angles when attacking our bombers. The Japs press their attacks furiously when our bomb-bay doors are

opened for a bombing run, approaching individually from many angles but attacking at the same time.

(2) *Bomber planes*.—The bombers used by the Japs are of a twin-engined type similar to our B-26. They usually bomb from about 25,000 feet.

(3) *Antiaircraft fire*.—Antiaircraft fire from Japanese ships is usually inaccurate except from battleships and heavy cruisers. All ships fire a barrage overhead when our bombers are making runs over them.

(4) *Direction Finders*.—The Japanese are now using radio direction-finding equipment in the Solomons to detect the approach of aircraft. Their equipment has not been very effective to date. Antiaircraft guns sometimes do not fire until our bombers have made their first run, and sometimes our bombers arrive over the target before the Jap fighters are able to take off.

(5) *Identifications*.—Observers feel that training in the identification of aircraft (and also of ships) cannot be overemphasized. They believe that actual service in the combat area is necessary to perfect this training.

k. Prisoners

The Japs seldom retreat or surrender. All those captured invariably ask, "When are we going to be killed?" Upon learning that they are not going to be killed, they beg never to be exchanged and sent back to Japan. They believe that it is a national disgrace for them to surrender, and that they and their families would be shunned for the rest of their lives in Japan.

The Japanese attitude toward surrender was illus-

trated in an incident that occurred during the first day of the operations in the Solomons. Five crewmen of a Jap bomber, shot down over Tulagi harbor, got into the plane's rubber boat but refused to be rescued. A U. S. destroyer approached, but one of the boat crew with a gun held off the rescuers. When it was apparent that the Japs were going to be captured by force, the man with the gun killed his companions and was turning the gun on himself when he was killed by machine-gun fire from the destroyer.

I. Food

Even in swamps and jungles, the Japs have learned to live off the land. Usually they are sent on missions with an emergency ration which includes rice and compressed and condensed foods, such as dried fish and vitamin tablets. They supplement this with jungle food that our forces generally would not consider eating. They are experts at knowing what is good for them, and what is poisonous or not good to eat.

m. Medical Care

The Japanese appear to have thorough knowledge of tropical diseases. They also know what poisonous bites to expect, and how to treat them. They seem to have some antitoxins, against jungle diseases, that we have not developed.

Most of the wounds our forces received in the Solomons were not serious. Unless a vital spot is hit, the Japanese 25-caliber weapons do not inflict bad wounds.

3. WEAPONS

a. Rifles

The Japanese have used two types of rifles, one of 6.5-mm caliber and the other of 7.7-mm caliber. The 6.5-mm rifle apparently has no telescopic sight; however, the sight has an attachment for leading planes during antiaircraft fire. The attachment can be adjusted to the speed of the plane.

b. Grenades

Japanese grenades are smaller than ours, and their effective bursting radius is much smaller. The Japs apparently realize the ineffectiveness of their grenades, because they throw them at their opponents and promptly charge with bayonets.

c. Mortars

The Japanese are using two or three types of mortars, one of which is reputed to be fired from the thigh of the gunner when he has assumed a squatting position. Later reports, however, indicate that the weapon is fired only while resting on the ground in front of the gunner.

d. Guns

These include a 47-mm antitank gun and a 77-mm gun. The latter is believed to have been captured from the British on Singapore Island. It is not known to be an organic part of Japanese artillery. (This 77-mm gun undoubtedly is either a 75-mm or a British 3-inch gun.)

Section II. OBSTACLES

1. INTRODUCTION

In addition to being well trained militarily, the Japanese are deceptive and cunning. They have used obstacles only on a limited scale thus far in this war because they have been mostly on the offensive in the land fighting. As they go more and more on the defensive in the coming months, the Japs are expected to use a wide variety of obstacles to block our advances. Our forces in the Solomon Islands, taking the offensive on a large scale, had to deal with numerous pit traps, most of which were mined and cleverly camouflaged.

Most of the information in this section, with the exception of that concerning road blocks, was taken from a captured Japanese manual on field fortifications. The manual does not go into elaborate details about obstacles, but all the pertinent data available is presented.

2. ROAD BLOCKS

In the Malaya and Burma campaigns, the Japanese frequently used road blocks to great advantage. Their

success was largely due to these factors: the jungle or swampy nature of the terrain, the scarcity of roads, the necessity of the British using the few roads available because their forces were largely motorized, and the fact that the Japanese usually outnumbered their opponents.

The blocks, as a general rule, were hastily prepared and were not very strong. Most of them could be broken easily by a powerful frontal assault, led or supported by tanks. Breaking through one barricade, however, was usually not enough, because the Japanese used them in series—at Shwedaung, Burma, five barricades had to be broken on one road before the British could continue their march. The Japanese also made a practice of closing in on the roads behind the British, thus blocking them off from units farther back.

The siting of the Jap road blocks was invariably good. They were located at points where the road passed through dense jungle or other enclosed country, such as rice fields or swamps. The actual blocks or barricades were always concealed from frontal observation except at a very short distance. They were strongly covered by well-sited mortars, light machine guns, and antitank guns. These weapons were placed in defiles—behind ridges or in hastily constructed holes or trenches. The frontage held on each side of the road was comparatively short, partly owing to the nature of the country.

To destroy these road blocks and allow uninterrupted movement of vehicles, matériel, and personnel, the Brit-

ish in Burma found the following tactics to be the most feasible :

Because of the jungle nature of the area on both sides of the road, only strong frontal attacks on a comparatively narrow front should be attempted. The attack must be carefully prepared and supported by every ounce of firepower available. It should be supported by barrage fire from all available artillery and mortars. Some of these weapons should be available for searching fire against enemy mortars in case the latter are used. The infantry should attack in waves with strictly limited objectives, each wave halting on its objective and taking up an all-around defensive position to be held until the whole column has passed. If tanks are available, they should precede each successive leading wave of infantry at infantry pace. Each leading wave of infantry must, in its turn, employ shock tactics, combining grenades with the fire of submachine guns, machine carbines, and Bren guns, and with the use of bayonets. It is necessary to capture and hold both sides of the road throughout the area so that the enemy cannot return to his positions dominating the route. But because of the jungle terrain, it is not necessary to hold a wide area on both sides of the road—strips wide enough to keep the enemy from observing the road are sufficient.

3. ANTITANK

The Jap manual describes two types of tank traps, one a triangular trench and the other a round one. The round trap, designed to allow the entire tank to fall into it, requires more effort to construct than the triangular trench.

“Antitank obstacles are designed to lift up the front end of the tank and check its advance,” the manual says. “Double-row obstacles may be constructed on

gentle slopes, while single-row obstacles are sufficient on relatively steeper ground. Tank traps are more easily discovered on sloping ground if not camouflaged, and they are more easily destroyed when located."

4. ELECTRIC

Electric obstacles are used mainly to kill or wound personnel and horses, and to help slow or stop an enemy offensive.

The obstacles are constructed by technical troops. The wire usually is strung on dry, barkless poles, or on poles with all buried parts insulated with asphalt or coal tar. The wire is connected to a high-tension power source, which generates 1,000 to 2,000 volts (alternating current). Transmission wires are sometimes strung along the ground, or under the ground.

The obstacles are electrified when opposing forces launch surprise attacks. Ordinarily, the electricity is off when the opposition is reconnoitering. Occasionally, in order to deceive, the Japanese turn the current on during reconnaissances. In an actual attack following such practices, the Japs turn the current on in one sector and off in another.

In searching for electrical obstacles put up by the opposition, the Japs use a detector and make personal reconnaissances with as much secrecy as possible. According to their manual, they seek to determine the voltage used, the location of the electric source, and the nature of the obstacles.

The Japanese manual says the best way to destroy

electrical obstacles is by the use of explosives, such as bangalore torpedoes. Other methods include cutting the wires and shooting them apart with tank fire. "All broken ends of the wire must be wound around posts or thrust into the ground so as to cut off the current," the manual states. "The demolition squads must be provided with rubber insulating gloves when carrying out demolitions. In addition, they must use nets, rubber boots, and other insulating devices in dealing with urgent demolitions."

Section III. REPORT BY BRITISH PRISONERS

The information in this section was obtained by 3 officers and 20 enlisted men of the British Army who escaped from the Japanese after having been held prisoners for 36 hours. They were part of a group of 80 captured when the Japs posed as Chinese troops and gave a friendly signal.

From this incident, it is clear that the Japanese in the future will try to take advantage of the difficulties experienced by United Nations forces in identifying troops as Chinese or Japanese. The Japs undoubtedly had learned—probably from Fifth Columnists—the signal used by the British and Chinese for means of identification.

The Japanese who deceived and captured the British group did not wear the five-pointed yellow star (denoting Jap army) on their caps. Their uniforms and physical features also resembled those of the Chinese. As pointed out in *Intelligence Bulletin* No. 2, a large percentage of Japanese soldiers have physical features similar to the North Chinese soldiers; therefore, ex-

treme caution should be exercised in making identifications.

At first the Japanese were very friendly to the British, and passed around cigarettes. Some of the Japs spoke good English. Shortly afterward, however, each of the British soldiers suddenly was seized from behind and relieved of his weapons. After the capture, 4 officers and 70 enlisted men were photographed by a movie camera, the operator of which was well trained and had plenty of modern equipment.

Some of the prisoners were fed concentrated food. The quantity was about two-thirds the size of a penny match box. The food was sweet and very nourishing.

One British officer noticed that the oil on a Japanese rifle appeared to collect neither dust nor sand.

Some of the prisoners reported that the Japanese were using a type of fire bomb which resembled small smoke candles about the size of a 1-pound jam jar. On striking a substance, the bomb would stick to the surface and then explode immediately. It would burn intensely with a blue flame and give off a little smoke for about 2 minutes. If the bomb stuck to an inflammable object, the area around the spot where it stuck would burn fiercely after the flame had died down. The bomb has no fuse to be lighted before it is thrown—by hand. The weapon proved very useful in driving troops from wooden houses.

Section IV. TANKETTE (LIGHT TANK)

This tank has been used by the Japanese more than any other type in the present war. The line drawings on the opposite page point out the areas vulnerable to fire from various types of British guns. The drawings were made by the British, who tested the armor. The .55 and .59-caliber weapons are slightly larger than our .50-caliber machine gun, while the 2-pounder is a 40-mm gun, with approximately the same characteristics as our 37-mm. Three different views of the tank are shown—top, side, and front.

Some of the outstanding characteristics of the tankette are as follows :

Weight.....	3 tons
Length.....	10 feet
Width.....	5 feet 9 inches
Height.....	5 feet 4 inches
Speed.....	20 miles per hour
Crew.....	2
Armament.....	1 or 2 light machine guns.

PART TWO: GERMANY

Section I. HINTS FOR SOLDIERS IN LIBYA

1. INTRODUCTION

This section is translated from a captured German handbooks for troops, titled *The Soldier in Libya*. It deals with health problems, clothing and shelter, relations with natives, and suggestions to motor vehicle drivers.

2. HEALTH

The climate of the country (Libya) is entirely different from that of Germany. The German soldier must first get accustomed to the peculiarities of the climate.

There are diseases which we do not have in Germany, and every German soldier must, for this reason, know the dangers which these climatic peculiarities represent for him.

He must pay special attention to the following:

a. Water

The water of the country may contain many things that cause disease; therefore, never drink water that has not been boiled.

Don't even wash out your mouth with unboiled water until the commanders declare it to be fit for use.

Drink tea or coffee, and use your portable filter apparatus, which renders all kinds of water suitable for drinking.

Don't drink any kind of mineral water or any kind of lemonade until the commanders have expressly declared them to be harmless. Sherbets and ice creams sold on the street are injurious to health; avoid them, even though you are very thirsty!

Don't bathe in bad water and don't bathe in rivers, lakes, ponds, or pools. It is permissible to bathe in the sea. Don't bathe when you are overheated.

b. Food

The best food is that which you get from your unit. Don't eat any raw meat. Don't drink any unboiled milk, and under no circumstances drink goat milk. Wash all fruit in suitable water or peel it before eating it. Don't buy melon offered for sale in slices by street vendors.

Don't store away food, especially in the case of meat, fish, and sausage. In the heat they spoil quickly and cause serious cases of poisoning. Protect your food from the flies, because they carry disease.

c. Vermin

In this country there are fleas, lice, ticks, mosquitoes, poisonous snakes, and scorpions. Use insect powder against the insects. Mosquitoes are carriers of malaria. Catch the mosquitoes in the morning and evening, in your shelter. If you allow a light to burn in your shelter, close the openings, because mosquitoes are attracted by lights.

While asleep, use a mosquito net. But when you get under the net, make sure that there are no mosquitoes under it and that there are no openings through which they can come in.

If you have lice or crabs, report the fact at once. Lice and ticks are carriers of spotted fever, a very serious disease.

The snakes in the country are very poisonous and crawl in the sand; so never walk barefoot in the sand.

If you are bitten by a snake or scorpion, bind the member that has been bitten, between the bite and the heart, so that it will not swell or become blue; then with a razor blade that you have disinfected with a flame, make a large cross-cut. Sucking the incision, a procedure often recommended, should not be done if you have a mouth sore or a decaying tooth. If possible, go at once to the surgeon of the unit or the medical officer. Always shake your shoes well before putting them on; they are a favorite hiding place for scorpions. When you see a rat, kill it.

d. Holding Animals

Dogs and cats are frequently carriers of serious diseases—for example, rabies and serious worm and blood diseases. Don't hold any dog, cat, or monkey.

e. Inoculations

Don't shun inoculations. They will protect you from serious diseases. The person who is not inoculated not only exposes himself, but endangers his comrades.

f. Avoiding Malaria

If tablets must be taken to guard against malaria, don't try to avoid them. Here, again, you would expose not only yourself, but your comrades as well.

g. Prickly Heat ("Red Dog")

Prickly heat is an annoying skin irritation which develops as a result of sultry heat and excessive perspiration. Frequent washing with warm water and lathering with "Afridol" soap (when you have it) is the best protection. Let the foam stay on for 15 minutes and then dry yourself by dabbing (don't rub yourself dry). Dry particularly in the folds of the skin and between the toes.

h. Shelter

In principle, avoid the houses of the natives. Give houses or barracks a good cleaning before using them as quarters.

In setting up tents, remember that the spot selected for the tent should be protected from snakes and scorpions; to do this, clean or burn off the ground.

i. Clothing

At night wear a waistband (girdle), and also wear one when you are making a long trip in an open vehicle, such as a truck. In this way you protect yourself from getting chilled. Never wear a waistband in the daytime, because you soften yourself in this way. From 0800 until 1600 hours, wear your tropical helmet when you are outdoors. You must also wear it in the tent, unless the tent is in the shade of a tree.

3. RELATIONS WITH NATIVES

The German soldiers in Libya are the representatives of a people who are on a high racial and cultural plane. Be a worthy representative of your people.

Don't treat the natives as your equals, and in particular do not meddle in their affairs. Don't show them that you are above them, but behave in such a way that the natives themselves will see and recognize your superiority. The natives do not think or feel as you do. Be reserved in dealing with them and don't wound their feelings. Take into account the manners and customs of the natives.

Respect their religious customs. Don't make fun of them for praying in the streets. When you go into mosques (Moslem churches), don't violate the native practices.

Keep away from the native women. You are a German. Respect the family customs of the natives.

Be moderate in the use of alcohol. Never lose control of yourself.

Always keep a strict military bearing and be exemplary in your appearance. This is more necessary in Africa than in Europe. Behave as a master without being dominating or arrogant.

Always be tactful, even in your dealings with natives. They are generally willing and dependable if handled properly.

In dealing with native tradesmen, one should always determine whether or not the price asked is excessive. As a rule, a native will lower his asking price, because he is accustomed to having people haggle with him (up to 50 percent). In cases of doubt, ask police authorities or Italians who are acquainted with the country.

4. SUGGESTIONS FOR DRIVERS

Driving in the hot climate of Libya, and on highways which are in part very difficult, requires much greater engine and vehicle performance as well as greater endurance and skill on the part of the driver. The temperature of the engine will not be under 80° Centigrade (176° Fahrenheit), and often it will reach the boiling point of water used to cool the engine. For this reason, much more water will be used (from 5 to 6 gallons daily per motor vehicle). Since you will find no water during trips, it will be necessary to take a supply in tin containers.

Because of the high temperature of the surrounding air and the high engine temperature, part of your fuel will evaporate. In addition, more fuel will be used on all the roads, with the exception of the good coastal highways and a few other tarred routes, because the roads are merely trails. The fuel consumption is increased by about one-fourth of the usual amount, and you must take along some reserve cans.

For fuel we generally use gasoline with an octane content of 76. In this hot region the gasoline which we now use with an octane content of 74 will cause the engine to knock. If in exceptional cases we are given gasoline with an octane content that is

lower than 76, we should mix with it some motor oil so as to increase its knock-resistance (to 10 quarts of fuel with an octane content of 74 and below, add about 1 quart of motor oil).

A special motor oil, the lubricating power and viscosity of which are suitable for tropical temperatures, is issued. If in special cases another oil must be put in, the driver first must see whether or not the new oil will mix with the kind he is already using. Many oils cannot be mixed and lead to saponification (changing into soap), thus destroying the lubricating power. If the oils will not mix, we must let out all the oil we have, wash out the motor housing with 1 or 2 quarts of oil, empty it again, and then fill it with new oil. Continuing the trip, we must observe the oil-pressure gauge carefully. If the pressure drops below one atmosphere, we should stop. The engine must cool off for a time. If the driver continues with an oil pressure below one atmosphere in spite of this condition, there is danger of wearing out the bearings.

Openings for oil, air exhausts, and air filters should be provided with special filters (wet filters) to prevent entrance of the fine desert sand which is blowing continually. When we fill up with water, fuel, and oil, and when we grease the vehicle, we must clean the openings and the lubricating places carefully and remove all sand. We should pay special attention to the care of the filter. Each time we tank up, we should take out the wet filter, wash it with gasoline or kerosene, and then soak it again with motor oil; in the case of other types, we should set the filter in the oil bath that is provided. When we take out the filter, we should cover the open filter housing with a rag so that no sand may get in it while it is open; otherwise, this fine, sharp-grained sand will destroy the vehicle in a short time. Because of all of the moving parts, the sand acts like fine sandpaper. The temperature range from day to night is often over 30°. If a vehicle has been running in the daytime and is allowed to stand and cool at night, dew may gather on it, and, in addition to the rust danger, this may also lead to serious and time-robbing ignition

disturbances. In the morning, if the engine does not start at once, further attempts to start it are useless (the batteries may be run down). We must see whether a spark passes on the spark plugs. If not, we should search all the cable connections of the ignition, the ignition distributors, and other movable parts of the ignition for a ground due to water. We should not try to start until we have dried all the wet parts.

A vital part of the vehicle is the battery; we should not fail to take care of it. Because of the hot climate of this region, and the heat that is radiated from the engine, the distilled water of a battery is evaporated very quickly. Examine the battery every day to see whether or not the liquid stands about $\frac{1}{2}$ inch above the plates. If the water is too low, pour in distilled water. In case of emergency, we may also use boiled water.

Apart from the first-class highways of Libya, many roads and trails have a relatively hard, thin surface. Under this is loose sand. In order to lessen sinking in as much as possible, we should use the following methods:

The pressure in the tires, insofar as the load of the vehicle will permit, should be decreased so that the tires will have a maximum bearing surface.

Don't make any sharp movements of the wheel, don't throw on the brakes violently, and don't run backward. In doing these things, we can easily break through the surface layer and cause the vehicle to sink in. If, beforehand, we recognize a place as a soft stretch of sand, we cross it on a rope ladder or on a wire net if we cannot go around it.

If the vehicle has sunk in, don't try to go either backwards or forwards by giving gas, because we will accomplish nothing in this way; we should stop the engine, lift the vehicle with the jack and put under the sunken wheel the planks that we have brought along with us. After we have lifted the vehicle, we should put sand in the hole caused by the sinking in of the wheel so that the plank will have a good surface to rest on. Of course we should also put a board under the jack; otherwise, the vehicle

will not be lifted and the jack will sink in the soft sand. After we have put the wheel on the plank, we should then start the motor and drive out with as little gas and as little turning of the wheel as possible (don't forget to pick up the tools).

Section II. NOTES FROM THE NORTH AFRICAN THEATER

1. ARMORED-CAR TACTICS

Questioning of German reconnaissance-unit prisoners reveals the following information about armored-car tactics:

Antitank guns moving on self-propelled mounts have advanced at times with the armored cars.

When attacked by low-flying aircraft, only the 4-wheeled vehicles engage with fire from their open turrets; 8-wheel cars, lacking open turrets, cannot fire.

The commander of an armored-car reconnaissance patrol always moves in the leading armored car.

2. AMMUNITION SUPPLY FOR TANKS

It is reported that trucks no longer go well forward to supply tanks with ammunition. Trucks now unload out of range of enemy artillery and establish small dumps, which can be cleared in a day. Drivers unload their own vehicles, no extra personnel being allotted for this purpose. Wherever possible, these dumps are

located under cover of rising ground, and the tanks come back to the dumps for fresh supplies of ammunition.

3. TANK TACTICS

German tank tactics are very flexible. Often a local commander can vary them, according to his own ideas and local circumstances. No tank opens fire until it is definitely sure of the identity of the target. German tanks advance on the enemy at full speed until they are within 200 to 300 yards; at this point they halt temporarily and fire. The operation demands a high degree of self-control, but the compensating factor is that a much larger percentage of hits can be scored from a stationary tank than from a moving tank.

4. TANK REPAIRS

Each tank battalion carries seven fully qualified tank mechanics. The regiment has a small repair shop, with adequate spares, which follows very closely behind the fighting units. Eighty percent of all tank repairs are made on the battlefield, but if a tank has to go back to its base, it is usually taken on a recovery vehicle.

5. ARMAMENT

The total number of shells carried by a Mark III tank is 80. Previous information indicated that 100 rounds were carried.

6. RADIO COMMUNICATION

Intercommunication between units ranging in size from the battalion to the regiment is on medium wave lengths. Intercommunication between units lower than the battalion is on short wave lengths. All wave lengths are allotted by the division, and are changed frequently.

7. LATEST INTERROGATION PROCEDURE

No formal questioning of prisoners regarding tactics is carried out by leading combat elements. As soon as prisoners have been captured, they are searched and then dispatched to division headquarters for tactical interrogation by division intelligence officers. The officer or noncom in charge of the front-line troops who have taken the prisoners goes alone to the rear, ahead of the captured men. He takes with him all captured documents, and informs division intelligence officers as to the local tactical situation so that they will be well equipped to examine the prisoners. If possible, he also attends the interrogation.

Section III. OPERATING THE MARK IV TANK

A captured German training pamphlet contains the following information regarding the duties of the crew of a Mark IV tank, and the means of intercommunication:

1. DUTIES OF THE CREW

The crew consists of five men—a commander, a gunner, a loader, a driver, and a radio operator who is also the hull machine-gunner.

The tank commander, who is an officer or senior noncom, is responsible for the vehicle and the crew. He indicates targets to the gunner, gives fire orders, and observes the fall of shots. He keeps a constant lookout for the enemy, observes the zone for which he is responsible, and watches for any orders from the commander's vehicle. In action, he gives his orders to the driver and radio operator by intercommunication telephone, and to the gunner and loader by touch signals or through a speaking tube. He receives orders by radio or flag, and reports to his commander by radio, signal pistol, or flag.

The gunner is second in command. He fires the turret gun, the turret machine gun, or the machine carbine, as ordered by the tank commander. He assists the tank commander in observation.

The loader loads and maintains the turret armament under the orders of the gunner. He is also responsible for care of ammunition, and—when the cupola is closed—gives any flag signals required. He replaces the radio operator if the latter becomes a casualty.

The driver operates the vehicle under the orders of the tank commander, or in accordance with orders received by radio from the commander's vehicle. So far as possible, he assists in observation, reporting over the intercommunication telephone the presence of the enemy or of any obstacles in the path of the tank. He watches the fuel consumption and is responsible to the tank commander for the care and maintenance of the vehicle.

The radio operator operates the radio set under the orders of the tank commander. In action, when not actually transmitting, he always keeps the radio set at "receive." He operates the intercommunication telephone and writes down any radio messages not sent or received by the tank commander. He fires the machine gun mounted in the front superstructure. He takes over the duties of the loader if the latter becomes a casualty.

2. INTERCOMMUNICATION

The following means of intercommunication are available:

External: Voice radio and key radio, flag signals, hand signals, signal pistol, and flashlight.

Internal: Intercommunication telephone, speaking tube, and touch signals.

The maximum distance for satisfactory voice radio communication between two moving vehicles is about $3\frac{3}{4}$ miles, and for satisfactory key radio communication about $6\frac{1}{4}$ miles.

Flag signals are used for short-distance communications only, and a flashlight is used at night. The signal pistol is used for prearranged signals—chiefly to other arms, such as the infantry.

The radio set, in conjunction with the intercommunication telephone, provides the tank commander, radio operator, and driver

with a means for external and internal voice communication. The same microphones and telephone receiver headsets are used in both cases.

When the control switch on the radio is set at *Empfang* (receive), and that on the junction box of the intercommunication telephone at *Bord und Funk* (internal and radio—that is, intercommunication telephone and external voice or key radio), the commander, radio operator, and driver hear all incoming voice radio signals. Any of these men can also speak to the other two after switching his microphone into the circuit by means of the switch on his chest.

For voice radio transmission, the switch on the radio set is adjusted to *Telephonie* (telephone). The telephone switch may be left at *Bord und Funk*. Either the tank commander or the radio operator can then transmit, and both they and the driver will hear the messages transmitted. Internal communication is also possible at the same time, but the conversation will be transmitted.

If the radio set is disconnected or out of order, the telephone switch may be adjusted to *Bord* (internal). The tank commander and driver can then speak to one another, and the radio operator can speak to them, but cannot hear what they say. This also applies when a radio receiver is available, but no transmitter, with the difference that incoming voice radio signals can then be heard by the radio operator.

The signal flags are normally carried in holders on the left of the driver's seat. When the cupola is open, flag signals are given by the tank commander; when it is closed, the loader raises the circular flap in the left of the turret roof and signals with the appropriate flag through the port thus opened. Flag signals are given in accordance with a definite code, the meaning of any signal depending on the color of the flag used and whether the flag is held still or moved in a particular way.

Pistol signals are given through the signal port in the turret roof, through the cupola, or through one of the vision openings in

the turret wall. The signal pistol must not be cocked until the barrel is already projecting outside the tank. It is normally used only when the tank is at the halt. The main function of this means of communication is the giving of prearranged signals to the infantry or other troops.

When the tank is traveling at night, with lights dimmed or switched off altogether, driving signals are given with the aid of a dimmed flashlight. The same method is also employed when tanks are in a position of readiness and when leaguered (in bivouac).

Orders are transmitted from the tank commander to the gunner by means of speaking-tube and touch signals. The latter are also used for messages from the commander to the loader, and between the gunner and loader.

Section IV. THE JUNKERS (Ju) 88

The name Junkers (Ju) 88 denotes one of the most widely used types of aircraft in the German Air Force, and should be thought of as applying to a whole family of airplanes. Each model is adapted for a specific purpose.

The Ju 88 is a cantilever low-wing, twin-engine monoplane, which was primarily designed as a bomber. For its size and wing load, the plane is regarded as highly maneuverable. Its controls are light and positive, and it can take quite violent action, even at the end of a dive. Except for the use of short or long wing-spans, the basic construction of the Ju 88 has not been changed since it first came out. Succeeding types, designated by series and numbers (for example, A1, A2, B1, and so on) now total 28 or more improved, specialized models.

The "A" series alone comprises 13 or more types, of which 9 are used primarily for bombing. Three types in this series are equipped with balloon-destroying apparatus. There are two trainer types, one with a short wing-span and the other with a long wing-span.

adapted for long ranges by the addition of detachable or auxiliary fuel tanks.

Apparently there is no standard practice as to the number, type, or placement of armament, since each type has different requirements. All aircraft have armor protection, but the low-level attack planes are especially protected from ground fire.

Machine guns are usually found in the nose, on top, and at the beam positions, but may also be found in the belly of the plane. Most machine guns are of the 7.9-mm (approximately .31 caliber) flexible type, but heavier guns, both fixed and flexible, and 20-mm cannons have also been used.

While the normal bomb load is believed to be more than 2,200 pounds, over 6,000 pounds may be carried by sacrificing fuel reserves or other weight. Torpedoes and mines have also been used instead of bombs.

The average crew of a Ju 88 consists of three or four men; however, only two men usually serve on the fighter type.

The Ju 88 bomber is encountered in every theater of operation and under all climatic conditions. These planes often constitute the backbone of German bombing assaults, as was particularly the case in the intense and prolonged attack on Malta early this year.

Section V. PRISONERS OF WAR

1. INTRODUCTION

All the powers engaged in the present war try to get as much information as possible from prisoners; they use various methods in questioning those captured, and sometimes resort to tricks and threats. Invariably, the soldier who continues to be a soldier after being captured fares better at the hands of his captors. A soldier is still a soldier for his country if he keeps his mouth shut after capture, except to give his name, rank, and serial number. Absolutely no other questions should be answered, according to the instructions given by both the Axis and United Nations—under international law, no other information is required.

British prisoners have been praised, even by their enemies, for refusing to talk after capture. The following statement about the British, made by Italian General Navarrini, was taken from a captured Order of the Day:

“When subjected to questioning by our Intelligence Branch, all enemy prisoners refused firmly and categorically to give any mili-

tary information whatsoever. They confined themselves to providing personal particulars and army numbers.

"More energetic demands and indirect questions intended to obtain certain details had no better success. The prisoners remained firm in their dutiful decision to obey the order not to talk, conscious of the fact that any other line of conduct would amount to treachery.

"I wish these facts to be brought to the notice of all (Italian) units. . . . Military honor demands that the spirit of dignity and pride of race should always be alive and present in the minds of our troops."

On the other hand, German and other Axis prisoners have given the United Nations forces valuable information, as can be noted from the following captured document, signed by Field Marshal Rommel, commander of Axis forces in North Africa:

"From the attached translation of three enemy news sheets of the 2d South African Division, it regrettably appears that German prisoners of war have talked inexcusably.

"On receipt of these examples, the troops will be instructed in detail how a soldier who is unfortunately taken prisoner of war is to behave. When questioned, give name, date of birth, birth-place, and rank. *No further information may be given.* As response to further questioning, the following will be the reply: 'I cannot answer any further questions.'

"In conversation with German prisoners of war who are not known, the greatest reserve will be exercised, as the English use agents in German uniforms to listen to prisoners.

"Furthermore, under no circumstances may soldiers who are taken prisoners of war—after the usual destruction of all service papers—allow diaries and letters from home to fall into enemy hands. Conclusions could be drawn from these as to food worries, air raid damage, and the like.

"The German soldier who is taken prisoner must prove that even in this disagreeable situation he does not lose his proud, superior bearing."

2. TRICKS USED BY GERMANS

Some of the tricks used by the Germans in trying to get prisoners to talk are as follows:

a. "Stool Pigeons"

In a building prepared for the occasion, prisoners are questioned in a half-hearted manner and are then transferred to another room where they find three or four other "prisoners." These "prisoners" are Italians or Germans who speak perfect English. To avoid detection, they are often dressed in a uniform of a service other than that to which the real prisoner belongs. (For example, RAF when the prisoner is in the army, American when the prisoner is English.) They are "stool pigeons," and are highly trained to get the information the questioners have failed to obtain.

b. Man-to-Man

"England and Germany should be fighting together. We don't hate one another." This is what the smiling Nazi says in an attempt to appear as a friend and make his British prisoners forget the atrocities he is committing all over the world.

c. Delayed Action

The prisoner is not questioned for several days—perhaps weeks. If he is in a hospital, they send along a

"wounded" German or Italian who has been in England and speaks a bit of English. He has all the charm of a vacuum-cleaner salesman, and gradually lets it leak out that he is anti-Nazi and perhaps has had a row with a fellow Nazi. He takes his time and gradually the conversation veers around to the war.

d. "Know-All"

"We know so much there is nothing you can tell us," says the Hun. He flips over a lot of important looking papers—"See what I have?" He is rude and attempts to provoke the prisoner into proving that he is not the ignoramus the interrogator thinks he is.

e. Third Degree

The prisoner is marched into a tent lit by one flickering lantern. There is a good deal of side play. The interrogator snaps out the routine questions: "Name—rank—number?" When the next question is greeted with silence, the sentry is ordered to leave the tent. The interrogator fingers his revolver. "I don't want to resort to methods we dislike," he says, and hopes the prisoner will believe the opposite. He may be taken into a confined space, such as an armored car. The interrogator talks in a low voice. He explains that he wants some important information and that he is determined to get it. He is candid. "You are alone; you have a family. You want to live. It is nice to be a hero when someone is looking, *but you are alone.*"

The note of death is constantly repeated in an attempt

to break down morale. The interrogator, however, is not going to kill the goose which may lay the golden egg. Besides, we have thousands of enemy prisoners, and news of what happens in German prison camps travels fast.

f. Try Again

Breaking down resistance and morale is the first object of the enemy interrogation officer. To do this, physical fatigue is often provoked by forced marches, light rations, and inadequate shelter. Another trick is the spreading of fantastic tales about Russian reverses, Japanese successes, and British and American losses. Then there is the time-worn trap: "Your comrades have told us everything, so why don't you?"

g. Listening Walls

In a Nazi or Fascist state, everyone is a suspect of the secret police. They are well trained in eavesdropping. Their experience is used in war time. After failing to obtain information by other methods, prisoners are put together in the most innocent-seeming circumstances. A hidden microphone reveals to a listening enemy any matters of military interest that are talked about.

3. HOW TO RESIST THE GERMANS

The answer to these tricks—and there are others—is the maintenance of a cast-iron security in the event of capture.

Direct questioning is a war of endurance between prisoner and interrogator, and the battle is lost by the one who tires first. If it is the questioner, the prisoner is passed on as "no good" to join his countrymen in a prisoner-of-war camp. If, however, he tries to bluff the interrogator by giving him false information, or to appease by giving half-truths; if any chink is found in his armor of security, he will often remain for weeks and weeks under a process of questioning, much to his own personal discomfort. The tough prisoner is not only admired by the enemy, but, if he wins out, has a far better time in the end.

Thus, strict observance of the rule of giving "Name, rank, and serial number only" does more than help one's comrades; it is in the best interests of the individual.

Conversations about military matters must always be avoided resolutely. Plans to escape should be discussed only in the open, away from persons you are not sure you can trust. Attempts by the enemy to persuade a prisoner into broadcasting must be resisted. It is only offered to serve a purpose.

Lastly, personal papers should never be carried into battle. Most insignificant pieces of evidence, such as personal letters, hotel bills, and street-car tickets give clues to a competent interrogator.

4. INTELLIGENCE FROM GERMAN PRISONERS

The *Intelligence Bulletin* for September published extracts from a captured German manual instructing

German soldiers how to behave in case of capture. American troops, who also receive careful instruction along this line, will be interested to know how the advice set forth in the manual tallies with the actual behavior of German prisoners of war.

No matter how painstakingly the German soldier has been drilled in the art of keeping his mouth shut—apart from telling his captors his name, rank, and number—German prisoners of war still reveal, without intending to do so, information of great value to the United Nations. A British Intelligence officer stationed in North Africa writes in a personal letter that the German prisoners he has questioned in his official capacity “nearly always respond (a) to someone who shouts at them, and (b) to show off knowledge. Many of them are comparatively silent about tactical information, but most of them will at least admit their units.”

According to this officer, the “show of knowledge method” worked especially well with one German engineer, who, unlike most of his countrymen, had no pay-book and no identification tag. When he refused to give his unit, he was asked, “Don’t you suppose we know what German engineer units are in Libya?” He said he didn’t believe that the British knew anything of the sort. As soon as the list of engineer units was reeled off to him, he gave the name of his own unit without hesitation.

“Other points which I have had a chance of verifying or discovering,” the British officer continues, “are (a) Never ask a leading question. (b) Don’t ask too many questions, one on top

of the other. (c) If the prisoner of war doesn't answer a question immediately, always leave a longer pause than you think necessary; he usually says something in the end which will help the interrogation even if it doesn't give you any information. (d) Don't expect too much from interrogation. Training courses inevitably present interrogation as something a little spectacular. If a chap does produce a spectacular piece of information, go to great pains to check it; for this purpose it sometimes helps to deny what he says, so that he is obliged to give the reason why he knows. (e) Out here, at any rate, it is practically useless to show a prisoner a map. The Germans apparently make little use of them; a corporal never has anything to do with one. If a prisoner of war starts to point out a route or a position on a map, he nearly always gets the scale wrong. It is best for the interrogator to have the map or the air photograph and to take some well-known reference point and then say 'You are standing here with your back to so-and-so. Now what do you see?' It is most important to cross-check any estimate of distance that a prisoner of war gives.

"I have held two parades of German prisoners of war, one of 16 men and the other of 95. The words of command taught at X (a training school in England) worked very well and so did the idea of calling out the senior NCO and making him do the work. Here, again, a show of knowledge and authority help a great deal. It was a good scheme to line them up, tell them to place all their belongings on the ground in front of them, and hold ready their paybooks and identification tags. On the first occasion the old trick worked of saying 'Everybody in the 104 Motorized Inf. Regt. fall in over there.' On the other, after the fall of Bardia, I told the senior NCO . . . to fall in the 95 other chaps according to units and, to my great surprise, he did it.

"The paybook was on the familiar pattern. Very occasionally a prisoner said he had handed it to the company office, and sometimes pages 3 and 4 were torn out. Practically always it

gave the necessary information. All officers carried paybooks.

"During the operations at Bardia, Salum, and Halfaya, many prisoners did not carry paybooks. These had been . . . kept . . . at the company office, where, in many cases, they were duly found later on. Instead of a paybook, prisoners carried a temporary certificate of identity giving the following particulars:

Rank, Christian name, surname,
Date and place of birth,
Home address,
Date of arrival in Africa.

"The certificate was signed by the company commander and was stamped with the field post number. Identification was therefore possible in most cases.

". . . Documents were almost fantastic in their quantity and value to us. . . . Minor examples are legion: war diaries, code names, photographs showing new weapons, training pamphlets, intelligence summaries, personal diaries, casualty returns, and so on. Two things stand out from the Intelligence officer's point of view: he must be able to read German script as well as possible, and he should have a very good knowledge of German conventional signs. The Germans use them for marked maps, orders of battle, operation orders, and vehicle markings—in fact, wherever possible. If an intelligence officer knows them by heart, he will save himself an immense amount of time."

Section VI. MISCELLANEOUS

I. USE OF TANKS

A captured German manual gives the following information about the use of tanks and the support given them by other forces:

a. Tank Objectives

Tanks set out to attack the enemy's infantry and infantry heavy weapons, artillery, command posts, reserves, and rear communications. But before they can get through to these targets, they must destroy their most dangerous enemy, the antitank defenses. For this reason the heaviest and most powerful tanks must lead the attack, and they must be supported by the other troops, infantry and artillery, both before and during the attack. The heaviest tanks should be directed to attack the points that are deepest within the enemy positions, such as artillery, reserves, and command posts. The lighter tanks attack the infantry. Each wave of tanks should be given a specific objective.

Tanks are also able to seize important points, such as river crossings, and to hold them until the infantry comes up.

The tanks can go to the attack more quickly if there are several roads leading to the front, and if crossings have been built over railroads, highways, and rivers.

b. Support by Other Troops

(1) *Infantry*.—The infantry must direct its heavy machine guns against the enemy's antitank defenses. The other heavy weapons must fire at targets outside the area of the tank action so that they will not disable their own tanks. Signals (such as tracers, flags, and radio) must be arranged in advance so that all units will work together.

(2) *Artillery*.—The artillery fires upon targets in front and to the flanks of the area of the tank action. It fires both high explosive and smoke. Adjustment can be attained through the radio or the artillery liaison detail, which can accompany the tanks.

(3) *Engineers*.—Engineers assist the tanks by strengthening bridges, building temporary crossings, and removing obstacles and mines.

(4) *Antitank Units*.—Antitank guns must follow the tanks as closely as possible so as to be able to enter the fight immediately if enemy tanks are met.

(5) *Aviation*.—Aviation has two duties: it should serve as reconnaissance before and during the time the tanks are in action, and it should attack the enemy's reserves, especially tanks and antitank defenses, before they can come into action.

As soon as the tanks reach their objectives, they at once prepare themselves for a new mission. They send reconnaissance forces to the front and find out how far the infantry has advanced. Their next movements are decided on the basis of these findings.

After the battle the tank force is withdrawn behind the lines and reorganized. The longer it has been in action, the longer the rest period should be.

2. TREATMENT FOR BLISTER GAS

For the treatment of gases that cause blisters, each German soldier carries 40 small tablets known as

“Losantin.” The tablets are kept in four small plastic boxes, each of which holds 10 tablets. Each box is labeled *Hautentgiftungsmittel*, which means “skin decontaminating agent.” A chemical analysis showed that the tablets are a dry bleach, which contains 39.8 percent chlorine.

To treat blister-gas wounds, the German soldier mixes one or more tablets with water or saliva to form a paste, which is applied to the affected parts of the body. The application is washed or wiped off after 10 minutes.

A fresh supply of the tablets is issued each soldier about every 6 months.

The plastic boxes have a tendency to tighten after being closed for some time and are hard to open. Also, the tablets sometimes stick together or crumble into powder.

A United Nations soldier, who captured some Losantin tablets, thought they were food tablets. He ate several, with serious results.

PART THREE: ITALY

Section I. THE INDIVIDUAL SOLDIER

1. WHAT HE IS LIKE

One of the first things to remember about the Italian soldier is that he entered this war without any strong personal conviction that it was necessary. Italy had no Pearl Harbor to unite her people and fill them with a relentless determination to win. A private belief of this kind can go a long way toward helping men to withstand the heavy psychological strain of combat. The American soldier has it; the Italian does not. As a result, a question commonly asked by American troops—"Is the Italian a good or bad fighter?"—cannot be answered in a single word. The Italian knows how to fight well. What offsets this is the fact that his moods are anything but predictable. Sometimes, when a flood of propaganda temporarily convinces him that the battle is above all for the sake of his homeland, and that there is a fair opportunity for success, he fights with great courage, skill, and imagination. On the other hand, military reverses often have a decided effect

on his morale, and can change his attitude from one of bright optimism to one of complete pessimism. It should never be said that his reactions will always be thus-and-so; only tendencies can be pointed out. It is certainly true that as the failure of Fascism becomes increasingly clear in spite of the propaganda, and as events indicate the manner in which Italy is being handed over to Hitler, the Italian soldier shows a tendency to put up a halfhearted fight and then surrender.

The Italian soldier has good reason to be dissatisfied. Italy has been in a practically continuous state of war since 1935—a strange circumstance for an unaggressive and naturally happy people who long had been accustomed to a simple, easygoing existence. Moreover, the Italian soldier is an individualist. Even though he may be excitable and quick to show anger—an anger that usually fades rapidly—he is generally a peace-loving man, a little lazy, and not especially qualified for undertakings that require tedious, thorough preparations and great attention to dull detail. The precision of German military science, to which he has had a first-hand introduction under Rommel's command in North Africa, is not up his street; in fact, the whole increase in German domination is a bad dream, steadily growing worse, from which he would like to awaken.

For all of this, there is no typical Italian soldier. Differences of character, customs, and language are explained by the differences between the various Ital-

ian provinces. For example, traces of an old German invasion still characterize the blood of some of the people in the northern part of the country, and in the extreme south a wild mingling of Mediterranean stocks has produced a strangely assorted population. A union of all the Italian states did not take place until as late as 1870. The Italians found it hard to live and work as a federated nation. In 1922, when the Fascist dictatorship was born out of poverty and political unrest, Italy lost her constitutional form of government without ever having settled down to make intelligent use of it.

From childhood the Italian soldier has submitted to the leadership of the Fascist Party, which has steeped him in a militant nationalism and has tried hard to make him a skilled fighter. Fascism, like Nazism, calls for unquestioning obedience to "the next man above." Heading the Fascist system is the Leader, Benito Mussolini, whose ambition has been to make Italy the ruler of all lands bordering the Mediterranean and to recapture for her the magnificence and authority of ancient Rome. The prospect of future greatness is dangled endlessly before the Italians. Since nearly everything in the country is state-controlled, an Italian is drenched with Fascist propaganda not only while he works but during his occasional hours of leisure. The *Dopolavoro* (literally, "after work"), a huge state-managed federation of clubs, sees to it that he does not stray from the Fascist fold at any time. In his radio programs, his

movies, his sports, his government-planned holiday trips—everything—emphasis is placed on the glory of the past and the glory of the future. Less is said about the present.

At the age of 6, a boy must join a society known as the “Sons of the Wolf.” This can best be described as a Fascist incubator, in which a child is prepared for membership in the *Balilla* (between the ages of 8 and 13), the *Avanguardisti* (between the ages of 14 and 17), and the Fascist Youth (between the ages of 18 and 21). Part-time basic and specialist military training is given continuously to all boys from the ages of 8 to 21, when they begin 18 months of compulsory service in the Army. In wartime this service term is of course prolonged indefinitely. While the boy is in the *Balilla* and the *Avanguardisti*, his training is directed by the Fascist Youth organization, which indoctrinates him with Party propaganda besides giving him preliminary military instruction. The Fascist Youth organization is taught, in turn, by the Black Shirt Militia under the direct supervision of the Ministry of War, other interested ministries, and the territorial military authorities.

A young man's only alternative to fulfilling the draft service requirement is to enlist for a minimum of 2 years in an armed force of his own choice.¹ For example, he may choose the Air Force, the Forestry Militia,

¹ All conscripts are enrolled on the draft rolls of the Army, except certain specially qualified men who are placed on the draft rolls of the Navy. Distribution of personnel to the various arms and services is made by the Army on the basis of each individual's qualifications.

the Finance Guards, the Public Security Police, or one of several other organizations.

A soldier's regular draft term is served with a tactical combat unit. Training is given by the professional cadre of the unit to which he is assigned, and to which he reports in April. The preceding class, which has had 1 full year of training, is still with the unit, and helps to absorb the new men into the organization and whip them into shape for the fall maneuvers. In peacetime the older class is then furloughed to the reserve, while the new class starts its winter course of garrison training, largely in specialist subjects.

Now, more than ever, the Italian soldier respects the famed standard of living in America, which has traditionally been his idea of a successful country, and to whose shores so many of his relatives have immigrated. And he marvels at his government's choice of Germany as an ally—for, again traditionally, he has always regarded Germany as a cruel and dishonorable neighbor.

The Italian Army pay scale is amazingly low. An Italian private receives \$1.51 a month, and a rank comparable to our private first class, \$1.60. Other comparable ranks receive monthly pay as follows: corporal, \$1.85 to \$2.21; staff sergeant, \$18.98 to \$25.71; technical sergeant or first sergeant, \$25.57 to \$29.60; master sergeant, \$27.99 to \$29.51. A monthly allowance of \$12.80 is made for the wife of an enlisted man, to which \$4.80 is added for each child. The maximum pay of a second lieutenant, including all possible allow-

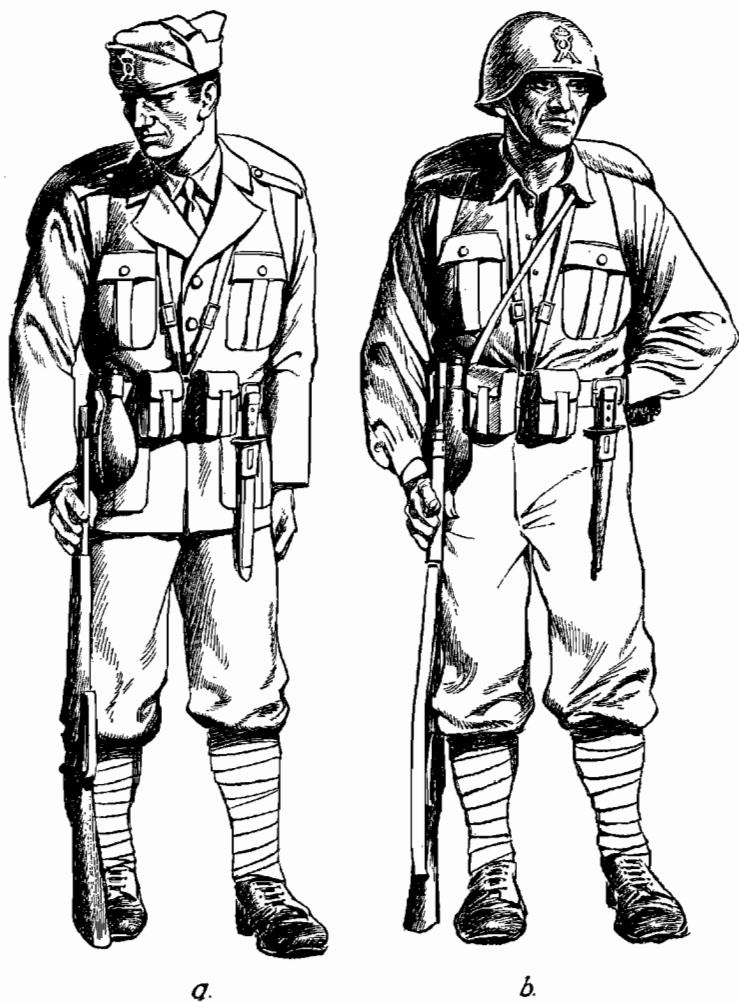


FIGURE 3.—(a) Italian field service uniform (standard); (b) Italian field service uniform (tropical).

ances for quarters, maintenance, and family, is \$845 a year. A first lieutenant's maximum pay is \$1,027 and a captain's, \$1,232.

The recreational facilities provided for a soldier in the field are sketchy. Although sports are encouraged, equipment is likely to be scarce. Occasionally an entertainment truck rolls up, and propaganda movies are shown. This escape from reality is welcome. In the movies, at least, no one is tired or ragged, there is plenty to eat and drink, and if the picture happens to be about the present war, the Italians are winning.

2. HOW TO IDENTIFY HIM

a. Standard Field Service Uniform (See Fig. 3a)

All ranks, including officers, wear the same type of field uniform. This consists of a garrison ("overseas") cap,² a shirt and tie, a coat, knickerbockers, and puttees³—all of gray-green cloth—and black leather shoes. A steel helmet is worn under orders in place of the garrison cap. Formerly, more elaborate field uniforms were worn. Some of these still may be encountered from time to time.

b. Tropical Field Service Uniform (see fig. 3b)

In hot climates officers and men wear a khaki shirt, sometimes substituting a shirt-coat, with a turned-

² Alpine troops, Blackshirt militiamen, pack artillery personnel, and customs guards wear a gray-green "Swiss yodeler" hat with a single upright feather; Bersaglieri wear a gray-green oval hat or a steel helmet, both with a dark green plume.

³ Cavalry, tank, motor transport, and some artillery personnel wear black leggings.

down collar, which can be worn open or buttoned up to the neck; khaki knickerbockers or breeches with puttees, leggings, or stockings—less often, khaki shorts or khaki trousers which fit tightly above the ankles; a steel helmet or a khaki sun helmet; and black leather shoes.

In North Africa a combination of a dark green coat and silver-gray breeches is occasionally seen. The Italian textile situation is so disorganized that departure from regulation dress is widely practiced and permitted in the field.

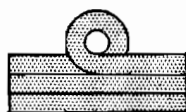
c. Insignia of Grade (see fig. 4)

(1) *Officers*.—On the gray-green field uniforms, patches with insignia of rank are worn on the sleeves of officers' coats and overcoats, just above the cuff. On the tropical uniform, a system of stars is worn on the shoulder straps—for example, three stars for a *capitano*, two for a *tenente*; one for a *sottotenente*. The addition of embroidery or braid to the stars denotes higher ranks.

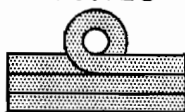
(2) *Warrant officers*.—Warrant officers wear shoulder straps, as illustrated. Similar designs appear on the garrison cap.

(3) *Noncoms*.—On all coats and overcoats, noncoms wear chevrons, the wings of which point upward when the chevrons are worn just above the cuff, or point downward when the chevrons are worn on the upper arm.

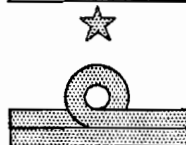
GOLD SLEEVE PATCHES



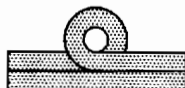
PRIMO
CAPITANO
(No U.S. equiv.)



CAPITANO
(Capt.)



PRIMO
TENENTE
(No U.S. equiv.)

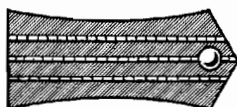


TENENTE
(1st Lt.)

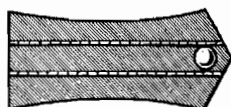


SOTTO-
TENENTE
(2nd Lt.)

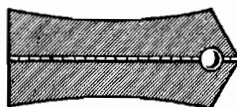
SHOULDER STRAPS WITH GOLD BRAID



MARESICIALLO
MAGGIORE
(W.O.)

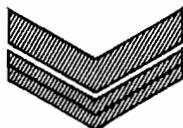


MARESICIALLO
CAPO
(W.O.)



MARESICIALLO
(W.O.)

RED CHEVRONS



CAPORALE
MAGGIORE
(No U.S. equiv.)

GOLD CHEVRONS



SERGEANTE
MAGGIORE
(No U.S. equiv.)



CAPORALE
(Corp.)



SERGEANTE
(Sgt.)



APPUNTATO
(No U.S. equiv.)

FIGURE 4.—Italian insignia.

d. Other Distinguishing Marks

(1) *Arms and services*.—Unlike the German Army, the Italian Army does not designate each arm and service by means of a single distinctive color. Instead, a wide variety of metal badges of elaborate design are used. These appear on the front of all types of headgear (stenciled in the case of steel helmets). Embroidered gold and black badges with the same designs were worn before the war, and still can be found on the shoulder straps of officers' tropical uniforms. Regimental numbers often appear in the center of this badge. In addition, all infantry regiments of the line wear brightly colored rectangular patches (*mostrine*) on each side of the coat collar, while other arms and services substitute their own devices (*mostreggiature*) in widely varying designs and colors. These patches and devices do not appear regularly on the tropical uniform.

(2) *Personal papers*.—Italian noncoms and privates carry a booklet known as a *libretto personale*, which lists the holder's age, name, rank, number, and unit (down to company or equivalent level). It also contains many useful particulars about the holder's civil and military history, together with details about the arms, equipment, and clothing on issue to him. It does not serve as a "pay book." One libretto only is issued to cover the whole of a soldier-citizen's military career.

The book carried by officers and warrant officers is

almost exclusively a pay book and is renewed each year. Much less information is obtained from it, but age, name, rank, and unit are recorded.

(3) *Identification tag*.—Italian military personnel wear an identification tag (*piastrina di riconoscimento*) on a chain around the neck. The tag is made of cheap metal, and records—not always in the following order—the holder's conscript class (that is, year of birth), number, code number of military district, religion, surname, Christian name, father's Christian name, mother's maiden name, mother's Christian name, and home town and province.

A tag can be split lengthwise into two identical plates.

Section II. FLAME THROWERS

1. INTRODUCTION

The Italians have developed two types of flame thrower, but neither of them has been used to any considerable extent except in certain phases of the Russian campaign. Like flame throwers developed by other powers, the Italian weapons have a very limited use on the battlefield. Their practical value is confined to close combat, such as assaults on pillboxes, trenches, boulder areas, caves, or other enclosed spaces. Even under these conditions, the crew operating a flame thrower is very vulnerable to many types of fire and grenades. Flame throwers used in tanks have much greater protection than those carried by hand. The Italians have a portable type and one which is mounted in a tank.

2. PORTABLE FLAME THROWER

This weapon, known as Model 35, has been used in several instances by the Italian infantry as a supporting weapon in Russia. Very little use of it has been made in the North African operations.

The flame thrower is capable of throwing a flame about 22 yards and making untenable a zone 38 yards long and 17 yards wide. Fuel for only 20 seconds of continuous flame is carried in the fuel container. The operator is taught not to maintain the flame continuously but to produce 10 jets of flame, each of which should last for about 2 seconds. Approximately 20 minutes is required to refuel and recharge the weapon so that it can operate again.

Two men, comprising a team, are required for each flame thrower. No. 1 carries the weapon on his back and operates it, and No. 2 carries on his back all the necessary supplies. No. 1 wears noninflammable clothing and a respirator.

It is not considered good tactics to use flame throwers in units smaller than a group. The latter consists of one leader, an assistant leader, and six squads. Each squad has two of the weapons—two teams.

The flame thrower consists of two cylinders, a length of reinforced and flexible tubing, and a jet or flame tube, to which is attached the trigger and the ignition arrangement. The cylinders are identical, and each contains the same type and amount of fuel. The fuel usually is ignited at the base of the jet, by a coil and spark gap—with a wick at the gap. The electrical current is produced by a dry-cell battery. Some are said to be ignited by means of a friction tube and a wick, which burns for 2 minutes.

Each of the cylinders contains nitrogen under pres-

sure and fuel oil. The oil ordinarily used is believed to be a mixture of benzine and light motor oil. Some of the fuel captured was a mixture of kerosene and lubricating oil, or fuel oil.

3. FLAME-THROWER TANK

The flame-thrower tank, technically known as L3.33 L. F., is a light tank which weighs $3\frac{1}{2}$ tons. One was captured in the North Africa operations and has been examined in the British Isles.

The flame-thrower projector is mounted at the front of the tank, replacing one of the two 8-mm machine guns in the turret. It throws a flame 40 to 45 yards. At a continuous rate, the flame will burn for 2 minutes and 15 seconds. It can be cut off and on at will, and generally is operated only a few seconds at a time.

The tank has a fuel trailer, which consists of a two-wheeled chassis with a tow bar connecting with the tank. Fitted to the bar is an armor-plated shell which houses a rectangular light steel fuel tank. At the rear end of the tank, under a hinged cover, is mounted a semirotary hand pump with necessary connections for refueling, defueling, and mixing the substances which form the fuel.

A second and larger pump, to force the fuel from the trailer to the flame projector, is located in the rear part of the tank, immediately behind the engine fan. The pump, operated by power from the engine, is connected to the projector by two pipes—one to deliver fuel and the other to return any not used.

An electric ignition system is used to start and stop the functioning of the flame thrower. The current is generated by power from the tank engine.

PART FOUR: UNITED NATIONS

Section I. MAINTAINING DIRECTION

1. INTRODUCTION

The experience of United Nations troops in the present war has proved the necessity of every soldier's being able to find his way over all types of terrain. The chances of individuals or small groups becoming separated from their units are much greater than in past wars because the use of modern weapons forces a wide dispersal of troops on the battlefield. Small groups also must be sent out on reconnaissance and security missions, and the safety or success of our forces depends on the ability of these groups to find their way back to their units—without much delay.

If you get lost, the worst thing you could do would be to lose your head and get into a state of panic.

Sit down and think the situation over calmly. Where could you have mistaken the way? Were your compass calculations correct? Where could you get back on your route? Nine times out of ten you can discover where you have gone wrong, and find your way back.

This section deals with various ways and means of maintaining direction. Most of the information is based on a lecture given at the British Commando School by Maj. Lord Lovat, the British officer who led the Commando raid against the Norwegian island of Vaagso.¹

2. WAYS AND MEANS

a. For Day or Night

Most of the practical ways and means to help in maintaining direction may be used at night as well as during the day, provided some form of light is available (and no patrol should ever go out without some form of light).

(1) *Compass*.—The compass is the most valuable aid in keeping direction, although experience shows that it is usually impossible to use it when under enemy fire. It also is unreliable in areas where there are lodestone deposits, as in northern Norway. The compass needle may also be deflected by such local objects as cap ornaments, gas masks held in the ready position, and so on.

An oil compass which is remarkably accurate under all conditions has been developed recently. It can be reset on successive bearings at night without the aid of a light—a great advantage over other compasses.

¹ For details on how to use compasses and maps, see chapter 12 of the *Soldier's Handbook*. Another excellent source for additional information on how to maintain direction is a small book entitled *Field Navigation, Part I, Dead Reckoning*, published by the Army Map Service, Washington, D. C.

At night, during bad weather, among mountains, or when under enemy observation, it is usually impossible to unfold and examine a map. It is therefore better to prepare a traverse card giving the distance and compass bearings from point to point along the route. The bearings should be taken off the map with a transparent protractor and then converted. The distances should be measured off the map in yards. By day and by night every man should compare his paces against a measured distance, up and down hill and along the level. Distance can also be checked by estimation of time—for instance, a man may know from experience that he travels at 4 miles per hour on a level road and $2\frac{1}{4}$ over rough country.

In thick mist, the party, if small, travels in single file so that each man keeps in sight of the man in front of him. The last man takes a bearing and sees that the leader sets off in the right direction (the leader marches on a definite point, or line of points, if visibility allows). The man with the compass frequently checks the distance and, after getting the attention of the leader, signals him to the right or left by pointing. When the leader is on line again, the man with the compass holds his arm above his head. In this manner, a surprising degree of accuracy can be attained, especially if each leg of the traverse ends at some easily recognized place, such as the top of a hill, a small lake or pond, or the junction of two streams. An error of 50° often throws one off only 150 yards to a mile.

(2) *Maps*.—From a map a soldier can memorize a

route by noting the outstanding features, such as ridges and water courses. Much practice is needed in using maps. It is very helpful to work out the easiest route between two places over rough country, and then to follow it exactly to see if it really is the best way. A good map reader can actually visualize the country by examining a map of it. He knows from the direction of a slope what vegetation to expect, and whether a certain route will be dry or wet underfoot.

(3) *Trees*.—The branches of trees grow away from the direction of prevailing winds in exposed countries and their roots are much more prominent on the windward side. Therefore, by knowing the direction from which these winds come, it is easy to determine the approximate position of north, south, east, west, and intermediate points.

In many countries moss and lichen grow only on the north (sunless) side of trees and rocks, and the bark of trees usually is thicker on the north side.

(4) *Wind*.—The wind usually is fairly constant at certain times of the day and year in most localities. One of the best ways to find the exact direction of the wind is to toss up a handful of dried grass or a few loose strands pulled from a woolen garment and allow them to float down. If clouds are used to indicate the direction of wind, only those directly overhead show the true direction. Even then, the wind may be different higher in the sky. In country covered with snow or sand, the angle of the drifts shows the direction of the prevailing and subsidiary

winds. (Always move upwind if possible, because you can hear the enemy better and he has greater difficulty in hearing you. You can also detect suspicious smells better.)

(5) *Marks*.—Following streams or ridges until you reach an area in which you know your way is one method to use if you are lost. If you are searching for your camp, which you know lies on a river or trail in a certain direction that you know roughly, do not try to go directly toward it, but go definitely to one side, so that when you reach the river or trail you will know which way to turn for your camp.

A knowledge of tracking is a valuable asset and provides much pleasure. A good tracker, on suitable ground, can tell exactly what has occurred out of the ordinary. He knows the number and formation of the enemy, the speed of his movement, and many other details that the average person would not be able to determine. If you are following enemy tracks, be careful that they do not lead you into an ambush.

At night there are various points to remember. When a bearing has been taken, it is helpful to hold a whitened (chalked) stick at about 45° as a prolongation of the axis of the compass needle. The stick will cut the horizon at a spot which can then be used to march on. The compass reader then sends out an assistant on the line until he is barely visible. Say, for instance, he stops 160 yards out. The man with the compass checks to see whether his assistant actually is on line, and then proceeds to the new point.

From this spot another point on the horizon is selected, and the assistant is directed to go 150 yards in that direction and stop without any signal. The compass reader repeats the same procedure as before, and the group keeps on its bearing—advancing 150 yards at a time. To check the hundreds when counting paces, it is a good idea to carry 10 pebbles or matches in one pocket and transfer one to another at the end of each hundred.

(6) *Altimeter*.—This instrument is useful as a check as long as it is set at a known height. For example, if a man is lost and finds himself at the top of a mountain, at a crossroad, or some other spot which would be shown on the map, a knowledge of the height of the mountain or crossroad would help to identify it on the map.

b. For Day Only

(1) *The Sun*.—The sun, in the Northern Hemisphere, is due south at midday. Since it moves 360° in 24 hours (15° per hour), the south point can be found if the time is known.

A more accurate method is as follows: Stand a pencil upright. (This can be done by sticking its base onto a penny with sealing wax or wax from a candle.) Draw a circle around it with a radius about as long as the pencil. The shadow of the pencil will fall outside the circle in the morning, will shorten as the sun rises higher, will fall well within the circle at midday, and will lengthen during the afternoon until it cuts the

circle a second time and again falls outside it. Mark the point at which it cuts the circle (this will occur at about 1000 hours and 1400 hours), bisect the line joining these two points, and the true north line will run from the base of the pencil through the center of this line. This method is accurate within a few degrees.

(2) *Sun compass*.—The sun compass is essentially a shadow compass, and must be reset at frequent intervals as the sun's declination changes. It has immense advantages over the magnetic compass for land navigation. Entirely unaffected by its surroundings, it can be made as accurate and precise as the operator desires. It gives true bearings, is easy to read, and is more sturdy. On the other hand, this compass can only be used when the sun is shining and when so mounted that the sun can fall on it unobstructed. Hence the compass is the complement of, and not a substitute for, the magnetic compass. Both must be available for the navigator, who uses the sun compass whenever possible, reserving the magnetic compass for sunless periods.

All types of sun compasses consist essentially of a vertical needle set at the center of a horizontal plate upon which the needle's shadow falls. The sun compass has no deviation, but the direction of the shadow (which corresponds to the variation in the magnetic compass) changes widely, though in a definite way, throughout the day, and at the same time of day from week to week and from one latitude to another. The sun compass, being liable to no errors, has long been used at sea for checking the deviation of the ship's

magnetic compass. The sun's azimuth throughout the day for all latitudes and declinations are given in azimuth tables.² The original setting and the corrections on the sun compass are obtained from an almanac.

(3) *Watch*.—If you have a watch, point the hour hand at the sun and bisect the angle between the hour hand and 1200 hours. This will give you true south. (After 1600 hours this angle must be measured in the direction that the hour hand has already traveled.

(4) *Study of Terrain*.—Any group to be sent out over terrain unfamiliar to them should make a careful study on the map of the areas it may cover, fixing in mind the general and prominent features and taking notes on these for study en route. Members of the group should observe the terrain carefully as they go out, in order to become familiar with landmarks or any other prominent features.

c. For Night Only

At night the sense of sound largely takes the place of sight, and the sense of smell may also prove valuable—especially with practice—in identifying the presence of animals, or certain kinds of vegetation, or the vicinity of water. At night, observe and remember the shape of skylines.

Stars are an excellent aid in maintaining direction—the greatest, in fact—and an intimate knowledge of

² Azimuth: an arc of the horizon measured clockwise between a fixed point (in navigation, usually the north point) and the vertical circle passing through the center of an object.

them relieves the loneliness and strangeness of solitary work at night. A specialist's knowledge is needed to find direction by the moon and planets.

The pole star is never more than 20 degrees away from True North (the error is at its maximum when a line joining the pole star to a point midway between the two end stars of the handle of the plough, is vertically above, or vertically below, the pole star). The pole star can be seen from the pointers, from Cassiopeia, or—if the north stars are all hidden—from Orion, although Orion is out of sight from May 20 to July 20.

If stars are being used in a compass march, take one at about 30 degrees altitude. If it is low, it may be lost in mist and will disappear if you descend into a valley; and if it is higher, you will get a crick in the neck by constantly observing it. Do not forget that a star is liable to swing in a counter-clockwise direction as much as 15 degrees per hour.

d. In the Desert

One of the most striking resemblances of desert warfare to naval warfare is in the widespread use of navigation. Landmarks are few, and at night even these few are practically impossible to see. Desert navigation consists essentially of setting a course by compass and following it by dead reckoning—that is, by traveling a measured distance. Before commencing a march, the destination is selected on the map, its compass bearing is measured with a protractor, and its dis-

tance is scaled off. The compass bearing is then set on a sun compass, which is mounted on each vehicle.

Distance is measured on the odometer (a mileage indicator), which must be carefully calibrated and kept in adjustment. The odometer is geared for a tire of a particular size. The navigator must therefore check his mileage indicator against a measured distance along a road with mile or kilometer marks, especially when using oversize "sand" tires. He then obtains a correction factor to be applied to all indicated distances. For ordinary work this factor may be small enough to be disregarded. In addition to the above constant-distance error, the mileage indicated by the same vehicle may vary by as much as 2 percent, according to the terrain, the speed, and the load. A good navigator tries to know his vehicle as quickly as possible.

Foot troops measure the distance marched by counting paces or using a pedometer. If a dismounted guide is used, several pace counters are employed. For night travel, a unit can guide on a star, provided the officers and men are trained to identify the stars and planets, and know how they change their positions in the heavens. A pocket chart is useful.

The marking of routes for night marches is accomplished as follows: The route is reconnoitered, during daylight hours if possible, and is marked. Each marker consists of an oil can, set on top of a stake, with a light inside the can. A small slit in one side of the can serves as a marker; the dot of light can be seen for miles to the rear.

Section II. SMALL ARMS ANTIAIRCRAFT FIRE

1. INTRODUCTION

Low-flying air attacks usually have three objectives: to destroy or damage matériel, to cause casualties to personnel, and to create confusion and otherwise affect morale. Whether such attacks are easily accomplished, or difficult and dangerous, depends on the volume and the effectiveness of antiaircraft fire directed against the attackers. Pilots on both sides in this war agree that one of the most difficult missions is to strafe or bomb troops who steady themselves and let go with every type of gun that will point upwards at the attackers. Extremely distasteful to attacking pilots is a stream of tracer bullets just ahead, in the path of their planes. Experience has shown that a good many pilots will turn rather than go through such a stream, while only a few can face it with sufficient coolness for accurate strafing or bombing.

2. TACTICS USED BY THE BRITISH

British small-arms or light antiaircraft fire has five main objectives, as follows:

- a. To inflict casualties on enemy aircraft;
- b. To maintain the morale of their troops;
- c. To protect vital points in the areas they occupy and their communications facilities;
- d. To prevent or reduce the effects of low-flying and dive-bombing attacks; and
- e. To protect columns of troops and matériel, or entrucking and detrucking areas.

Motor trucks in columns are usually the most vulnerable targets to low-flying air attacks. Realizing this, the British maintain a wide interval between trucks while in movement and a wide dispersion of them while at a halt. Off roads and in open country, their trucks move in several columns, more or less abreast.

Constant observation for enemy planes is maintained by all units. Since the planes attack at a high rate of speed, only a few seconds are available to get set for counter fire. Generally, the number of air observers used depends upon the tactical situation. In a moving column, each vehicle is required to have an observer. These observers should be well trained. It is extremely difficult to determine whether planes are our own or enemy aircraft. Hostile markings are a sure guide, but these are visible only when a plane is passing fairly well overhead. Careful studies should be made of silhouettes, because they probably are the most dependable means of quick identification.

As a precaution while at a halt, the British always mount two antiaircraft light machine guns in each

sub unit and in each unit headquarters. Crews stand by in readiness for action.

Repeated short blasts of a whistle denote an air attack.

If attacked while in movement, all vehicles are halted—unless orders to the contrary have been issued. If the column is under orders to keep moving, all light machine guns open fire. Otherwise, all personnel get out of the halted vehicles, disperse, and open controlled fire at the hostile aircraft. If time permits, it is always a good idea to dig slit trenches for personnel while at a halt. All small-arms weapons are used when the planes come within range. The fire is controlled by platoon commanders—in some cases, owing to wide deployment, the control is under section leaders. In no case are troops allowed to take cover without resisting the attackers.

Experience has taught the British that small-arms fire is most effective against dive-bombers when they are diving towards the weapons or pulling out of a dive. At these times the pilot is unprotected by armor. During this period only 3 or 4 seconds elapse, so speed in opening fire is a major essential in successfully combating the attackers.

3. TACTICS USED BY THE GERMANS

German ground forces attack hostile low-flying planes with every weapon which they can point at them. This combined fire of many types of guns is very intense. Use of tracer bullets by some of the machine guns is

calculated to increase greatly the effect of the firing upon the morale of the attacking pilots.

Besides taking the usual safety measures involving dispersal, cover, and camouflage, the Germans have an elaborate air observation system.

4. TACTICS USED BY THE RUSSIANS

A captured German order describes the effectiveness of the Russian light antiaircraft defenses. Extracts from the order are quoted, as follows:

“During the past 2 months (January and February, 1942), it has been found that our loss of planes from small-arms ground fire has been exceptionally high. In one of our air units which supported a ground attack, the loss from enemy small-arms ground fire was 50 percent. The reason for this lies in the well-organized Soviet antiaircraft fire. Our aviation units have made the following observations:

“a. Every Soviet ground unit attacked by our aviation opens fire on our planes with rifles and other infantry weapons. The probability of hits on a small target by widely distributed ground fire is very great.

“b. As soon as Soviet cavalymen are attacked, they dismount and fire from a standing position with their rifles placed on the saddles. The infantrymen lie on their backs and fire.

“c. Mortar fire is also used. I do not point this out as an example to be followed but to explain that the Soviets fire on aircraft with all weapons used by ground troops.

“d. The Soviets place light and medium anti-aircraft artillery, transported on sleds, at the head of the column.”

5. EFFECTIVENESS OF FIRE

Carefully aimed small-arms fire at the proper time against low-flying planes almost always damages the aircraft, and frequently it causes casualties to the flying personnel. The results usually are not apparent to those conducting the fire on the ground because of the speed of the planes. Even if a plane remains in the air only 30 seconds after being hit, it will fly 2 or 3 miles before falling. Therefore, the ground forces should not be disappointed if planes fly away apparently unhit. Few planes vigorously attacked are able to escape at least minor damage. Every attacking plane not shot down has to be checked thoroughly after reaching its base. Not only must all serious damage be repaired but every bullet-hole must be patched and a search made for any hidden damage. Frequently parts must be replaced and sometimes new motors must be installed. All this takes time and requires labor. In the meantime, these planes are grounded and are not available for combat.

Section III. DUST

1. GENERAL

Military units operating in desert country or in regions which lack moisture in certain seasons soon find that dust is an aggressive enemy of men, vehicles, and weapons. Opposing forces engaged on such terrain discover that each faces an additional foe. Since in this global war it has been impossible to avoid operations in dust-ridden areas, and since the conflict may move to new theaters, equally dust-ridden, it is to a soldier's advantage to know as much as possible about the "capabilities" of this natural enemy.

2. EFFECTS ON MAN

When finely powdered dust is inhaled, it is likely to stick to the sensitive mucous membranes, drying up the natural moisture and forming hard crusts. Similarly, when dust enters the air passages of the throat and lungs, it serves as a sharp irritant, causing mucous accumulations and coughing. If the dust happens to contain such dangerous micro-organisms as the colon

bacillus, various cocci, or tetanus, infection may be expected to result.

3. EFFECTS ON MOTORS

a. External

The erosive action of dust and sand on tires and rubber parts shortens the effective life of these articles from one-half to four-fifths.

Marked injury to vehicles can result when dust sticks to oiled bearing surfaces, such as springs and shackle, axles, bushings, and so on. United Nations troops have learned to guard constantly against this in such regions as North Africa and parts of India, and to take thorough counter-measures—especially in the case of vehicle parts which, by their constant close fit, insure long life, safety, or precision.

b. Internal

Even the most modern air filters fitted to automotive vehicles do not eliminate entirely the dust and grit particles in the intake air. The modern air-cleansing devices capable of delivering absolutely dust-free air to the engine would take up more space than is available under the average automobile hood.

Road dust has an abrasive action which causes serious and rapid wear on the pistons, rings, cylinder walls, and valve mechanism, resulting in excessive oil and gasoline consumption.

United Nations personnel have found the following countermeasures effective when motor vehicles are operated in heavy dust:

(1) Frequent cleaning and flushing of air-filter elements;

(2) Elimination of dust, sand, and grit particles accumulated in the crankcase system by more frequent oil changes, accompanied by thorough flushing of the engine with a light-bodied oil;

(3) In the case of gasoline engines, the addition of an upper-cylinder lubricant to the gasoline;

(4) For chassis lubrication, the use of a substantial-bodied, stringy grease, with a high melting point, which will stay put even under very high temperatures.

4. EFFECTS ON OTHER EQUIPMENT

In dusty country, arms and weapons of all sorts, from the pistol to the artillery piece, wear out faster than elsewhere unless continually maintained. Cloth and leather are worn out by abrasion in one-tenth to one-fourth of the normal time.

5. EFFECTS ON OPERATIONS

Operations by mechanized units in heavy dust and sand storms may be compared with night operations. Direction-finding and identification are made difficult, but withdrawals are made easy. Artillery fire by direct laying is restricted because of the muzzle blast. The location of artillery observation posts requires extra consideration. Strategic moves often are made with-

out disclosure, but close-in attacks by tank are generally considered unprofitable. Although infiltration by various types of units is possible, surprise can be double-edged, since the enemy may choose to follow similar tactics.

In heavy dust areas each vehicle moves in its own small dust storm. Surprise is impossible and offensive maneuver difficult. The artillery is hampered, especially in direct firing, and all vehicles generally move at increased distances apart and down wind from occupied points.

In any case, operations are slowed down considerably, not only because of low and intermittent visibility, but because of the time-out required for the maintenance, recovery, and repair of vehicles.

"If we know a thing, we know it; but very often we are not wise to the fact that we are wise."

—O. Henry